

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): A moving picture editing method for editing compression coded moving ~~picture~~ pictures by utilizing inter-frame prediction based on motion compensation, ~~wherein~~ the method comprising:

determining if ~~one or two~~ reference frames which were utilized for motion compensation of a subject frame, ~~constituting a part of the moving picture before editing and which were not deleted during editing in edition so as to constitute a part of the moving picture after editing, is or~~ are subject to error generation in processing ~~although not subject to lack in edition;~~ and

searching motion vectors in a range centered on each pre-edit motion vector ~~before editing of the subject frame are searched for to find the a post-edit~~ motion vector after editing corresponding to ~~the a~~ minimum value of ~~the a~~ difference between ~~the a pre-edit~~ motion compensated picture ~~before editing and a post-edit~~ motion compensated picture after editing.

2. (currently amended): A moving picture editing method for editing compression coded moving ~~picture~~ pictures by utilizing inter-frame prediction based on motion compensation, ~~wherein~~ the method comprising:

determining if ~~one or two~~ reference frames which were utilized for motion compensation of a subject frame, ~~constituting a part of the moving picture before editing and which were not~~

~~deleted during editing in edition so as to constitute part of the moving picture after editing, is or~~  
~~are subject to error generation in processing although not subject to lack in edition;~~

searching motion vectors in a range centered on each pre-edit motion vector ~~before~~  
~~editing~~ of the subject frame ~~are searched for to find the a post-edit~~ motion vector ~~after editing~~  
corresponding to ~~the a~~ minimum value of ~~the a~~ difference between ~~the a pre-edit~~ motion  
compensated picture ~~before editing~~ and a post-edit motion compensated picture ~~after editing;~~

obtaining the post-edit motion compensated picture by motion compensation utilizing the  
post-edit motion vector; and

coding a picture difference obtained as a result of subtraction of the post-edit motion  
compensated picture ~~after edition, obtained by motion compensation utilizing motion vector after~~  
~~editing, from pre-edit~~ decoded data ~~before editing~~ of the subject frame; ~~is coded to obtain post-~~  
edit picture difference coded data ~~after editing;~~ and

coding ~~is performed from the post-edit~~ picture difference coded data ~~after editing thus~~  
~~obtained and the post-edit~~ motion vectors ~~after editing to obtain post-edit~~ coded data ~~after editing~~  
of the subject frame.

3. (currently amended): A moving picture editing method for editing compression coded  
moving picture by utilizing inter-frame prediction based on motion compensation, ~~wherein the~~  
method comprising:

determining if ~~one or two~~ reference frames which were utilized for motion compensation  
of a subject frame, ~~constituting a part of the moving picture before editing and which were not~~

~~deleted during editing in edition so as to constitute part of the moving picture after editing, is are~~  
subject to error generation in processing ~~although not subject to lack in edition, and also;~~

determining if ~~either~~ at least one of the reference frames meets at least a condition that  
error generation in the reference frame ~~it takes place as a result of results from~~ re-encoding in  
~~edition~~ during editing or a condition that the coded data has changed and the motion vector are  
has changed in edition during editing such that ~~the~~ a number of macroblocks having a difference  
between a pre-edit motion vector ~~before editing~~ and a post-edit motion vector ~~after editing~~  
~~exceed~~ exceeds a ~~predetermined~~ threshold number;

searching motion vectors in a range centered on each pre-edit motion vector ~~before~~  
~~editing~~ of the subject frame ~~are searched for to find~~ the post-edit motion vector ~~after editing~~  
corresponding to ~~the~~ a minimum value of ~~the~~ a difference between ~~the~~ a pre-edit motion  
compensated picture ~~before edition~~ and a post-edit motion compensated picture ~~after editing~~, and  
counting ~~also~~ the number of macroblocks having a difference between the pre-edit motion  
vector ~~before editing~~ and the post-edit motion vector ~~after editing~~ are counted.

4. (currently amended): A moving picture editing method for editing compression coded  
moving picture by utilizing inter-frame prediction based on motion compensation, ~~wherein the~~  
method comprising:

determining if ~~one or two~~ reference frames which were utilized for motion compensation  
of a subject frame, ~~constituting a part of the moving picture before editing and~~ which were not  
deleted during editing in edition so as to constitute part of the moving picture after editing, is are

subject to error generation in processing ~~although not subject to lack in edition;~~ and also

determining if either at least one of the reference frames meets at least a condition that its error generation in the reference frame results from takes place as a result of re-encoding in edition during editing or a condition that coded data is has changed; and a picture difference is has been re-encoded in edition during editing and the a number of macroblocks of post-edit picture difference coded data after editing and a number of macroblocks of pre-edit picture difference coded data before editing exceed a predetermined threshold number;

obtaining a post-edit motion compensated picture by motion compensation utilizing the post-edit motion vector of a subject frame;

subtracting the post-edit motion compensated picture from pre-edit decoded data of the subject frame to obtain the picture difference;

coding the picture difference obtained as a result of subtraction of motion compensated picture after editing, obtained by motion compensation utilizing the motion vector after editing of the subject frame, from decoded data before editing of the subject frame is coded to obtain the post-edit picture difference coded data after editing, also;

coding is ~~performed from the~~ post-edit picture difference coded data ~~after editing and the pre-edit motion vectors before editing to obtain post-edit coded data after editing of the subject frame, and the number of macroblocks having a difference between the post-edit picture difference coded data after editing and the pre-edit picture difference coded data before editing.~~

5. (currently amended): A moving picture editing method for editing compression coded

moving picture by utilizing inter-frame prediction based on motion compensation, ~~wherein the~~  
method comprising:

determining if one or two reference frames which were utilized for motion compensation  
of a subject frame, ~~constituting a part of the moving picture before editing and which were not~~  
~~deleted in edition~~during editing so as to constitute part of the moving picture after editing, is are  
subject to error generation in processing ~~although not subject to lack in edition~~during editing;  
and also

determining if either at least one of the reference frames meets a condition that ~~the~~ coded  
data and a motion vector are changed ~~in edition~~during editing; such that ~~the~~ a number of  
macroblocks having a difference between a pre-edit motion vector ~~before editing~~ and a post-edit  
motion vector ~~after editing exceed~~ exceeds a ~~predetermined~~ threshold number, ~~and or~~ also meets  
at least a condition that the coded data is not changed ~~in edition~~during editing, a condition that  
~~the~~ a picture difference is not re-encoded ~~in edition~~during editing, although the coded data is  
changed therein, or a condition that, although ~~change in the coded data~~ has changed and ~~re-~~  
~~encoding of the picture difference~~ has been re-encoded ~~have taken place in edition~~during editing,  
the number of macroblocks having a difference between post-edit picture difference coded data  
~~after editing and pre-edit~~ picture difference coded data ~~before editing~~ is less than a ~~predetermined~~  
threshold number,

searching motion vectors in a range centered on each pre-edit motion vector ~~before~~  
~~editing of the subject frame are searched for the motion vector corresponding to the~~ a minimum  
value of ~~the~~ a difference between ~~the~~ a pre-edit motion compensated picture ~~before editing~~

~~and~~ and a post-edit motion compensated picture after editing, and;

counting the number of macroblocks having a difference between the pre-edit motion vector before editing and the post-edit motion vector after editing are counted;

determining if the one or two reference frames each meet at least a condition that the coded data is has not changed in edition during editing, a condition that the motion vectors are not changed in edition during editing, or a condition that; the number of macroblocks having a difference between the pre-edit motion vector before editing and the post-edit motion vector after editing is less than a predetermined threshold number;

~~while determining if the one or two reference frames meet a condition that change in the coded data has changed and re-encoding of the picture difference has been re-encoded have taken place in edition during editing~~ such that the number of macroblocks having a difference between the post-edit picture difference coded data after editing and the pre-edit picture difference coded data before editing exceed exceeds a predetermined threshold number;

~~picture difference obtained as a result of subtraction of subtracting the post-edit motion compensated picture after editing, obtained by motion compensation utilizing the motion vector after editing of the subject frame, from pre-edit decoded data before editing of the subject frame is to obtain a picture difference;~~

coding the picture difference to obtain post-edit picture difference coded data after editing, also;

coding is performed from the post-edit picture difference coded data after editing and the post-edit motion vector after editing of the subject frame, and;

counting the number of macroblocks having a difference between the post-edit picture difference coded data ~~after editing~~ and the pre-edit picture difference coded data ~~before editing~~ ~~are counted~~; and

determining if one of the ~~one or two~~ reference frames meets at least a first condition that it is a frame subject to error generation due to re-encoding ~~in editing~~ during editing, or a second condition that ~~change in the coded data~~ has changed and ~~re-encoding of the picture difference~~ has been re-encoded ~~have taken place in editing~~ during editing such that the number of macroblocks having a difference between the pre-edit motion vector ~~before editing~~ and the post-edit motion vector ~~after editing~~ ~~exceed~~ exceeds a ~~predetermined~~ threshold number and the number of macroblocks having a difference between the post-edit picture difference coded data ~~after editing~~ and the pre-edit picture difference coded data ~~before editing~~ ~~exceed~~ exceeds a ~~predetermined~~ threshold number;;

searching motion ~~vector~~ vectors in a range centered on the pre-edit motion vector ~~before editing~~ of the subject frame ~~are searched for~~ to find the motion vector corresponding to ~~the a~~ minimum value of ~~the a~~ difference between the pre-edit motion compensated picture ~~before editing~~ and the post-edit motion compensated picture ~~after editing~~;;

counting the number of macroblocks having a difference between the pre-edit motion vector ~~before editing~~ and the post-edit motion vector ~~after editing~~ ~~are counted~~;;

~~picture difference obtained as a result of subtraction~~ subtracting of the post-edit motion compensated picture ~~after editing~~, obtained by motion compensation utilizing the motion vector ~~after editing of the subject frame~~, from the pre-edit decoded data ~~before editing of the subject~~

frame to obtain post-edit picture difference coded data ~~after editing~~;

~~coding is performed from the~~ post-edit picture difference coded data ~~after editing~~ and the pre-edit motion vector ~~before editing~~ to obtain post-edit coded data ~~after editing~~ of the subject frame; and

counting the number of macroblocks having a difference between post-edit picture difference coded data ~~after editing~~ and pre-edit picture difference coded data ~~before editing~~ are counted.

6. (currently amended): The moving picture editing method as in any one of claims 1-3 or 5, wherein candidates for each post-edit motion ~~vectors~~ vector ~~after editing~~ are limited to motion vectors present in a ~~predetermined~~ range centered on the pre-edit motion vector ~~before editing~~.

7. (currently amended): The moving picture editing method as in any one of claims 1-3 or 5, wherein candidates for each post-edit motion ~~vectors~~ vector ~~after editing~~ are limited to motion vectors, which are equal to the pre-edit motion vector ~~before editing~~ or motion vectors present in a ~~predetermined~~ range centered on the pre-edit motion vector ~~before editing~~ and having a non-integer coordinate value as a horizontal or vertical coordinate value.

8. (currently amended): A moving picture editing system for editing compensation coded moving picture by utilizing inter-frame prediction based on motion compensation, the system comprising:



a motion vector searcher ~~for searching~~which searches motion vectors in a range centered on each pre-edit motion vector ~~before editing for to find~~ a motion vector corresponding to ~~the a~~ minimum value of ~~the a~~ difference between a pre-edit motion compensated picture ~~before editing~~ and a post-edit motion compensated picture ~~after editing~~; and

a controller ~~for controlling~~which controls the motion vector searcher to search for the post-edit motion vector of the subject frame, ~~if when one or two~~ reference frames which were utilized for motion compensation of a picture frame, ~~constituting a part of the moving picture before editing~~ and which were not deleted ~~in edition~~during editing ~~so as to constitute part of the moving picture after edition, is are~~ subject to error generation in processing ~~although not subject to lack in edition~~during editing, ~~the motion vector searcher to search for the motion vector after editing of the subject frame.~~

9. (currently amended): The moving picture editing system according to claim 8, further comprising:

a motion compensator ~~for executing~~which performs motion compensation utilizing the post-edit motion vector ~~after editing~~ to obtain a post-edit motion compensated picture ~~after editing~~;

a subtracter ~~for subtracting~~which subtracts the post-edit motion compensated picture ~~after editing~~ from pre-edit decoded data ~~before editing~~ of the subject frame to obtain a picture difference; and

a variable length coder ~~for executing coding from~~which codes the post-edit picture

difference coded data ~~after editing~~ and the post-edit motion vector ~~after editing~~ to obtain post-edit coded data ~~after editing~~ of the subject frame.

10. (currently amended): A moving picture editing system for editing compensation coded moving picture by utilizing inter-frame prediction based on motion compensation, the system comprising:

a motion vector searcher ~~for searching~~ which searches motion vectors in a range centered on each pre-edit motion vector ~~before editing~~ for to find a motion vector corresponding to ~~the a~~ minimum value of ~~the a~~ difference between a pre-edit motion compensated picture ~~before editing~~ and a post-edit motion compensated picture ~~after editing~~;

a counter ~~for counting~~ which counts macroblocks having a difference between a pre-edit motion vector ~~before editing~~ and a post-edit motion vector ~~after editing~~; and

a controller ~~functioning such that, if~~ which controls the motion vector searcher and the counter,

wherein when one or two reference frames which were utilized for motion compensation of a the subject frame, ~~constituting a part of the moving picture before editing and~~ which were not deleted ~~in edition~~ during editing so as to constitute a part of the moving picture ~~after editing~~, is are subject to error generation in processing ~~although not subject to lack in edition~~, and also if ~~either~~ at least one of the reference frames meets at least a condition that error generation in ~~it the~~ reference frame results from ~~takes place as a result of re-encoding in edition~~ during editing or a condition that ~~the~~ coded data has changed and the motion vector ~~are~~ has changed ~~in~~

~~edition~~during editing such that ~~the~~a number of macroblocks having a difference between the pre-edit motion vector ~~before editing~~ and the post-edit motion vector ~~after editing~~ ~~exceed~~ exceeds a ~~predetermined~~ threshold number, ~~it~~the controller controls the motion vector searcher to search for the post-edit motion vector ~~after editing~~ of the subject frame and the counter to count the number of macroblocks having a difference between the pre-edit motion vector ~~before editing~~ and the post-edit motion vector ~~after editing~~.

11. (currently amended): A moving picture editing system for editing compensation coded moving picture by utilizing inter-frame prediction based on motion compensation, the system comprising:

a motion compensator ~~for executing~~which performs motion compensation utilizing a post-edit motion vector ~~after editing~~ to obtain a post-edit motion compensated picture ~~after editing~~;

a subtracter ~~for subtracting~~which subtracts motion the post-edit compensated picture ~~after editing~~ from pre-edit decoded data ~~before editing~~ of ~~the~~a subject frame to obtain a picture difference;

a variable length coder ~~for executing coding from~~which codes the post-edit picture difference coded data ~~after editing~~ and the post-edit motion vector ~~after editing~~ to obtain post-edit coded data ~~after editing~~ of the subject frame;

a counter ~~for counting~~which counts macroblocks having a difference between the post-edit picture difference coded data ~~after editing~~ and the pre-edit picture difference coded data

~~before editing; and~~

~~a controller functioning such that, which controls the motion compensator to obtain the post-edit motion vector after editing of the subject frame, controls the subtracter to subtract the post-edit motion compensated picture after editing from the decoded data before editing of the subject frame, controls the picture difference coder to code the post-edit picture difference coded data after editing, controls the variable length coder to code the post-edit coded data after editing of the subject frame, and controls the counter if when one or two reference frames which were utilized for motion compensation of a subject frame, constituting a part of the moving picture before editing and which were not deleted in edition during editing so as to constitute a part of the moving picture after editing, is are subject to error generation in processing although not subject to lack in edition during editing, and also if either at least one of the reference frames meets at least a condition that error generation in the reference frame results from it takes place as a result of re-encoding in edition during editing or from a condition that the coded data is has changed in edition during editing and the picture difference is re-encoded such that the number of macroblocks having a difference between post-edit picture difference coded data after editing and pre-edit picture difference coded data before editing exceed exceeds a predetermined threshold number, it controls the motion compensator to obtain the motion vector after editing of the subject frame, the subtracter to subtract the motion compensated picture after editing from the decoded data before editing of the subject frame, the picture difference coder to code the picture difference coded data after editing, variable length coder to code the coded data after editing of the subject frame, and the counter to count the number of macroblocks having~~

~~difference between picture difference coded data after editing and picture difference coded data before editing.~~

12. (currently amended): A moving picture editing system for editing compensation coded moving picture by utilizing inter-frame prediction based on motion compensation, the system comprising:

a motion vector searcher ~~for searching~~which searches motion vectors in a range centered on each pre-edit motion vector ~~before editing~~ to find a motion vector corresponding to ~~the~~ a minimum value of ~~the~~ a difference between a pre-edit motion compensated picture ~~before editing~~ and a post-edit motion compensated picture ~~after editing~~;

a first counter ~~for counting~~which counts ~~the~~ number of macroblocks having a difference between a pre-edit motion vector ~~before editing~~ and a post-edit motion vector ~~after editing~~;

a motion compensator ~~for performing~~which performs motion compensation utilizing the post-edit motion vector of ~~the~~ a subject frame ~~after editing~~ to obtain a motion compensated picture;

a subtracter ~~for subtracting~~which subtracts the post-edit motion compensated picture ~~after editing~~ from the pre-edit decoded data ~~before editing~~ of the subject frame;

a picture difference coder ~~for coding~~which codes the post-edit picture difference coded data ~~after editing~~ from the picture difference;

a variable length coder ~~for coding~~which codes the post-edit coded data ~~after editing~~ of the subject frame from the post-edit difference picture coded data ~~after editing~~ and the post-edit

motion vector ~~after editing~~;

a second counter ~~for counting~~ which counts macroblocks having a difference between the post-edit picture difference coded data ~~after editing~~ and pre-edit picture difference coded data ~~before editing~~; and

a controller, ~~functioning such that~~:

wherein if ~~one or two~~ reference frames which were utilized for motion compensation of a subject frame, ~~constituting a part of the moving picture before editing~~ and which were not ~~deleted in editing~~ during editing so as to constitute a part of the moving picture ~~after editing~~, is are subject to error generation in processing ~~although not subject to lack in editing~~ during editing, and ~~also if either~~ at least one of the reference frames meets a condition that the coded data has changed and the motion vector ~~are~~ has ~~changed in editing~~ during editing, such that ~~the~~ a number of macroblocks having a difference between a pre-edit motion vector ~~before editing~~ and a post-edit motion vector ~~after editing~~ exceeds ~~exceeds~~ a ~~predetermined~~ threshold number, and ~~also~~ or meets at least a condition that the coded data ~~is~~ has not changed ~~in editing~~ during editing, a condition that the picture difference is not re-encoded ~~in editing~~ during editing, although the coded data ~~is~~ has changed therein, or a condition that, although ~~change in~~ the coded data has changed and ~~re-encoding of the picture difference~~ has been re-encoded ~~have taken place in editing~~ during editing, the number of macroblocks having a difference between post-edit picture difference coded data ~~after editing~~ and pre-edit picture difference coded data ~~before editing~~ is less than a ~~predetermined~~ threshold number, ~~it the controller~~ the controller controls the motion vector searcher to search the post-edit motion vector ~~after editing~~ of the subject frame and ~~also control~~ controls

the first counter to count the number of macroblocks having a difference between the pre-edit motion vector ~~before editing~~ of the subject frame and the post-edit motion vector ~~after editing~~ thereof, and

wherein if the ~~one or two~~ reference frames each meet at least a condition that the coded data is has not changed ~~in edition~~ during editing, a condition that motion vectors ~~are~~ have not changed ~~in edition~~ during editing, or a condition that ~~the~~ a number of macroblocks having a difference between a pre-edit motion vector ~~before editing~~ and a post-edit motion vector ~~after editing~~ is less than a ~~predetermined~~ threshold number, ~~while or~~ the ~~one or two~~ reference frames meet a condition that ~~change in~~ the coded data has changed and ~~re-encoding~~ of the picture difference ~~have taken place~~ has been re-encoded in edition during editing such that the number of macroblocks having a difference between post-edit picture difference coded data ~~after editing~~ and pre-edit picture difference coded data ~~before editing~~ ~~exceed~~ exceeds a ~~predetermined~~ threshold number, ~~if the controller~~ controls the motion compensator to obtain a post-edit motion compensated picture ~~after editing~~ of the subject frame, controls the subtracter to subtract the post-edit motion compensated picture ~~after editing~~ of the subject frame from post-edit decoded data ~~after editing~~ of the subject frame so as to obtain a picture difference, controls the picture difference coder to execute coding to obtain post-edit picture difference coded data ~~after editing~~ of the subject frame and controls the second counter to count macroblocks having a difference between the post-edit picture difference coded data ~~after editing~~ of the subject frame and the pre-edit picture difference coded data ~~before editing~~ thereof, and

if at least one of the ~~one or two~~ reference frames meets at least a first condition that it is a

frame subject to error generation due to re-encoding ~~in editing~~ during editing, or a second condition that ~~change in the coded data~~ has changed and ~~re-encoding of the picture difference has been re-encoded~~ have taken place in editing during editing such that the number of macroblocks having a difference between a pre-edit motion vector ~~before editing~~ and a post-edit motion vector ~~after editing~~ exceeds a ~~predetermined~~ threshold number and the number of macroblocks having a difference between post-edit picture difference coded data ~~after editing~~ and pre-edit picture difference coded data ~~before editing~~ exceeds a ~~predetermined~~ threshold number, ~~it~~ the controller controls the motion vector searcher to search for the post-edit motion picture ~~after editing~~ of the subject frame, controls the first counter to count macroblocks having a difference between a post-edit motion vector ~~before editing~~ of the subject frame and a pre-edit motion vector ~~before editing~~ thereof, controls the subtracter to subtract the post-edit motion vector ~~after editing~~ of the subject frame from the pre-edit decoded data ~~before editing~~ of the subject frame so as to obtain the a picture difference, controls the picture difference coder to execute coding so as to obtain the post-edit picture difference coded data ~~after editing~~ of the subject frame, controls the variable length coder to execute coding so as to obtain post-edit coded data ~~after editing~~ of the subject frame and controls the second counter to count macroblocks having a difference between the post-edit picture difference coded data ~~after editing~~ of the subject frame and the pre-edit picture difference coded data ~~after editing~~ thereof.

13. (currently amended): The moving picture editing system as in any one of claims 8-10 or 12, wherein the controller limits the range of search of motion vectors after editing in the



motion vector searcher to motion vectors, which are the same as the post-edit motion vector ~~after editing~~ or motion vectors present in a range in the neighborhood of the post-edit motion vector ~~after editing~~.

14. (currently amended): The moving picture editing system as in any one of claims 8-10 or 12, wherein the controller limits the range of search of motion vectors after editing in the motion vector searcher to motion vectors, which are the same as the post-edit motion vector ~~after editing~~ or motion vectors present in a range in the neighborhood of the post-edit motion vector ~~after editing~~ and having non-integer coordinate values as horizontal or vertical coordinate values.

15. (currently amended): A ~~storing~~ computer-readable storage medium, in which moving picture editing programs for realizing the functions set forth in any one of claims 1-5 or 8-12 in a personal computer are stored.